



NONPOINT SOURCE SUCCESS STORY

Nebraska

Renovation of Big Springs Community Lake Restores Beneficial Use

Waterbody Improved

Complaints by local residents about excessive accumulation of woody debris led the Nebraska Department of Environmental Quality (NDEQ) to list Big Springs Community Lake for aesthetic use impairment in the Nebraska 2012 Water Quality Integrated Report. The pond also had a historic accumulation of sediment that precluded a viable fishery. A community planning effort resulted in renovation of the pond to remove the sediment and debris and make other changes to the pond. Conditions improved, and NDEQ removed Big Springs Community Lake from the Clean Water Act (CWA) section 303(d) list in 2014.

Problem

Big Springs Community Lake is a 1-acre pond in the community of Big Springs in southwest Nebraska's Deuel County. The pond was the centerpiece of a small community park adjacent to South Platte High School in Big Springs. Age and historic management practices in the watershed took a toll on the pond since its construction in 1927. Sediment accumulated from shoreline erosion left the pond with shallow, stagnant water and steep banks.

Other sources of sediment to the pond included historical agricultural management practices and erosion within the parkland immediately surrounding the pond. Row crop production was once prominent in the watershed, but most of the land has been converted back to grassland for forage or pasture production or enrolled in the U.S. Department of Agriculture's Conservation Reserve Program. The pond also had an excessive accumulation of woody debris and had developed a significant leak (Figure 1). It no longer supported a fishery nor provided an appealing place for recreation and community activities.

The NDEQ listed the pond (waterbody ID SP1-L0095) for aesthetic use impairment in the Nebraska 2012 Water Quality Integrated Report. Current sediment inputs from the watershed were considered fully controlled. Other sources of impairment to the pond, such as woody debris, were considered natural. Restoration of the aesthetic use benefit required removal of the accumulated sediment and woody debris.



Figure 1. Big Springs Community Lake, before renovation.

Project Highlights

The community of Big Springs requested assistance from the NDEQ's Community Lakes Enhancement and Restoration (CLEAR) program to restore the community pond. CLEAR Team members from NDEQ, Nebraska Game and Parks Commission, and University of Nebraska Extension visited the site and helped the community develop a renovation plan and a funding package. Restoration of the pond was completed in 2010–2011. Woody debris was removed; 2,500 cubic yards of sediment was excavated; the shoreline was reshaped, armored and re-vegetated; a pond liner was



Figure 2. Community partners remove woody debris from the lake area.

installed to reduce leakage; and habitat structures were installed to enhance the fishery (Figure 2). The depth of the pond was increased from a maximum of 5 feet to an average depth of greater than 10 feet over 25 percent of the surface area, which will allow the pond to sustain a warm water fishery year-round (Figure 3). Grading and stabilizing the shoreline improved ease and safety of access and provided protection from shoreline erosion. To complete the project, the Nebraska Game and Parks Commission restocked the pond with bluegill, largemouth bass and channel catfish of catchable size. The community installed picnic tables and other amenities to attract park users. The adjacent school developed activities to enhance outdoor classroom experiences for students.

Results

Today the pond is again a destination for community activities and recreation. The renovation project removed 2,169 tons of sediment, 1,800 pounds of phosphorus and 1,041 pounds of nitrogen from the pond. Outdoor classroom activities bring students from the adjacent school to learn about water quality and other natural resources issues. The pond supports a vigorous fishery with water clarity exceeding 3 feet. Inspection of the pond in 2015 confirmed that restoration had removed the aesthetic impairment. Big Springs Community Lake was removed from the 2014 CWA section 303(d) list of impaired waters.



Figure 3. Big Springs Community Lake, after community partners completed renovation.

Partners and Funding

The Big Springs Community Lake restoration project was accomplished under NDEQ's CLEAR program, a partnership of the NDEQ (Section 319 Program), Nebraska Game and Parks Commission, and the University of Nebraska Extension. CLEAR team members provided technical assistance for planning and developing the project. The Panhandle Resource Conservation and Development District assisted by coordinating partners and promoting the project. The community of Big Springs and South Platte High School developed facilities and activities to enhance visitation and use of the park and pond.

Total cost for removing woody debris and sediment, reshaping and re-vegetating the shoreline, and installing the pond liner and habitat structures was \$215,771. These costs were shared by NDEQ Section 319 (\$53,000), Nebraska Environmental Trust (\$123,810) and the City of Big Springs (\$38,961). Nebraska Game and Parks Commission provided and delivered fish for restocking.



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